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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/099,698	03/13/2002	Regis Vaillant	14XZ00157	1979

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General Electric Company
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Fairfield, CT 06431

EXAMINER

ARTMAN, THOMAS R

ART UNIT	PAPER NUMBER
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2882

DATE MAILED: 08/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/099,698

Applicant(s)

VAILLANT ET AL.

Examiner

Thomas R. Artman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 December 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-16 and 18-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-8,16,18-23,28-39 and 44-47 is/are rejected.
- 7) ☒ Claim(s) 9-15,24-27 and 40-43 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/06/2004
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

Claims 1, 16 and 33 are objected to because of an antecedent basis issue. The term “image acquisition” appears in lines 3, 8 and 12 of claim 1, in lines 9 and 14 of claim 16, and in lines 8 and 12 of claim 33. It appears that the term is referring to the “means for acquiring images” which is previously stated in each of the claims. The term “image acquisition” *per se* refers to an event of acquiring an image rather than referring to a device by which the images are acquired, and thus confusion ensues. The structure must have a consistent name in the claims in order to reduce ambiguity, such as Applicants’ “means for acquiring images” or “image acquisition means”, for example. Appropriate correction is required.

Claims 4, 6, 8, 9, 11, 13 and 14 are objected to because of the following: the claims are dependent upon cancelled claim 2. It would appear that the claim dependencies should be as follows:

- a) claim 4 should depend from claim 1,
- b) claim 6 should depend from claim 1; however, that makes it redundant with respect to claim 5, and so claim 6 should be cancelled,
- c) claim 9 should depend from claim 1, and
- d) claim 13 should depend from claim 12.

Claims 8, 11 and 14 may retain their current dependencies.

Appropriate correction is required.

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Claim 15 is objected to because of an antecedent basis issue with the term “the tracking system” which does not appear in parent claims 5 or 1. It is assumed that claim 15 depends from claim 12, not claim 5.

Appropriate correction is required.

Claims 25-27 and 41-43 are objected to because of an apparent claim dependency issue that is causing several antecedent basis problems. It appears as though the dependencies should be as follows:

- a) claim 25 should depend from claim 24,
- b) claim 26 should depend from claim 25, and
- c) claim 27 should depend from claim 24.

Similarly:

- d) claim 41 should depend from claim 40, and
- e) claim 43 should depend from claim 40.

Claim 42 may retain its current dependency.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3-8, 16, 18-23, 29, 33 and 35-39 are rejected under 35 U.S.C. 102(e) as being anticipated by Charles (US 6,816,564).

Regarding claims 1, 16 and 33, Charles discloses an apparatus and method (Figs.1A, 1B, 3, 6A and 9D), including:

a) an x-ray source 133 and means for acquiring images 152, both of which are mounted so as to rotate about at least one axis (gantry 122) with respect to a support 190 that supports an object 191 to be x-rayed,

b) acquiring at least two images corresponding to two different angular positions of the X-ray source and means for acquiring images (Fig. 1B) separated by an angle greater than 15 degrees (45 degrees; col.7, line 60, through col.8, line 11),

c) identifying, on these images, projections of at least one point of the X-rayed object (bone center), and

d) determining the magnification factor of at least one of the images, first, as a function of the angular displacement of the X-ray source and means for acquiring images, and second, as

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a function of the positions on these images of the identified projections (col.17, lines 9-17 and 27-45).

Regarding claim 20, Charles discloses a method (Figs.1A, 1B, 3, 6A and 9D), including:

- a) an x-ray source 133 and means for acquiring images 152,
- b) determine a distance from the means for acquiring images to the object (col.17, lines 9-17 and 27-65),
- c) taking first and second projections of an object at two different angles with respect to a reference (Fig.1B and col.7, line 60, through col.8, line 11),
- d) calculating on the basis of the projections a spatial position of a point on the object (col.17, lines 9-17 and 27-65), and
- e) calculating the distance from the X-ray source to the object (focal point to center of bone) based on the spatial position to determine the magnification factor (col.17, lines 9-17 and 27-65).

With respect to claims 3, 4, 18, 19, 22, 23, 29 and 34-38, Charles further discloses that the angular displacement between the two images is about 45 degrees (col.7, line 60, through col.8, line 11).

With respect to claims 5-8 and 39, Charles further discloses that a plurality of images are acquired between a first and second angular position (Fig.9D, as well as col.17, lines 46-53).

With respect to claim 21, Charles further discloses that the magnification factor is determined first, as a function of the angular displacement of the X-ray source and means for acquiring images, and second, as a function of the positions on these images of the identified projections (col.17, lines 9-17 and 27-45).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 28, 30-32 and 44-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Charles, as applied to claims 20, 21 and 33 above.

With respect to all the above claims, Charles does not specifically disclose image acquisition rates of 15 to 30 degrees per second, gantry rotation rates of 30 to 90 degrees per second, with each image being taken at an angular separation of 20 degrees. However, the device of Charles is a computed tomography (CT) device, in which such rotational rates and image acquisition rates are commonplace. Further, Charles does disclose taking images at 30-degree intervals (Fig.9D).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the device of Charles to have such fast, CT image acquisition rates and gantry

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rotation rates in order to reduce blurring due to patient motion. Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made for Charles to take images every 20 degrees instead of every 30 degrees in order to improve the accuracy of the magnification calculation as well as obtain more complete image data of the bone in order to improve the health and risk analyses performed on the bone.

Allowable Subject Matter

Claims 9-15, 24-27 and 40-43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art of record neither teaches nor reasonably suggests the additional limitation of using automated tracking methods in conjunction with the magnification determination method as required by each of claims 9-12, 24 and 40.

Claims 13-15, 25-27 and 41-43 are allowed by virtue of their dependency.

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Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Roehm (US 5,293,574) teaches a similar automated tracking method without any mentioning of determining a magnification factor from two different projects. Webber (US 6,289,235) teaches the practice of determining magnification factors through use of fiducial markers. Webber (US 5,359,637) teaches a calibration method.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas R. Artman whose telephone number is (571) 272-2485. The examiner can normally be reached on 9am - 6:30pm Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thomas R. Artman
Patent Examiner



Craig E. Church
Primary Examiner